March 5, 1957 W. L. HUDSON 2,783,937

REMOVABLE BANK MECHANISM FOR PERIODIC COIN COLLECTOR

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Fig. 1.

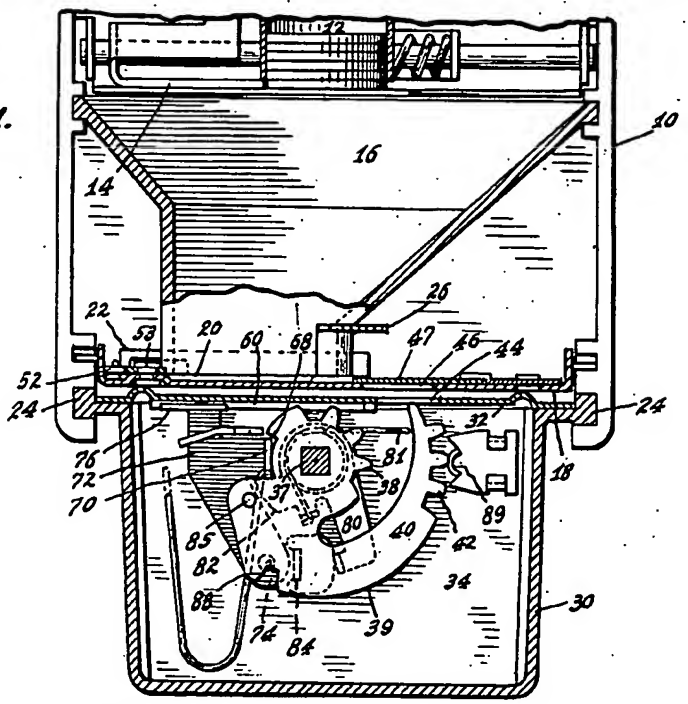

Fig. 2.

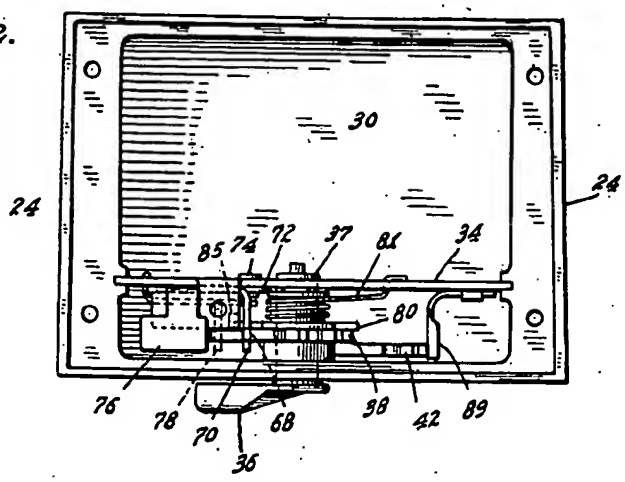

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Fig. 3.

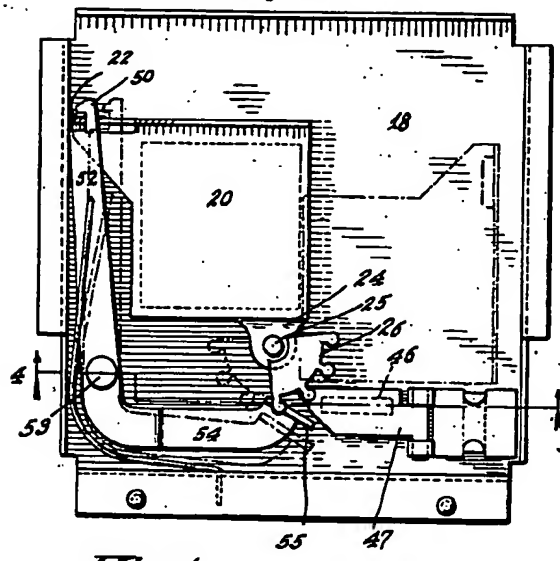


Fig. 5.

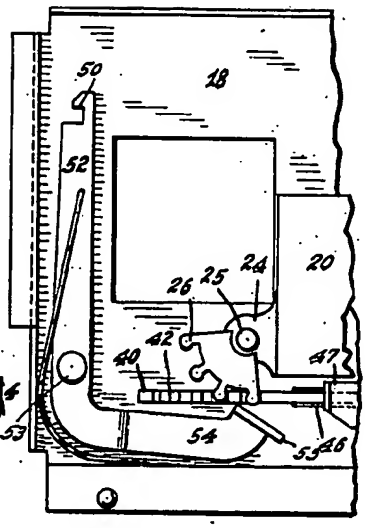


Fig. 4.

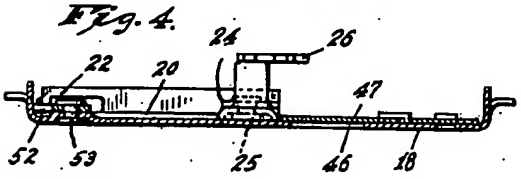


Fig. 6.

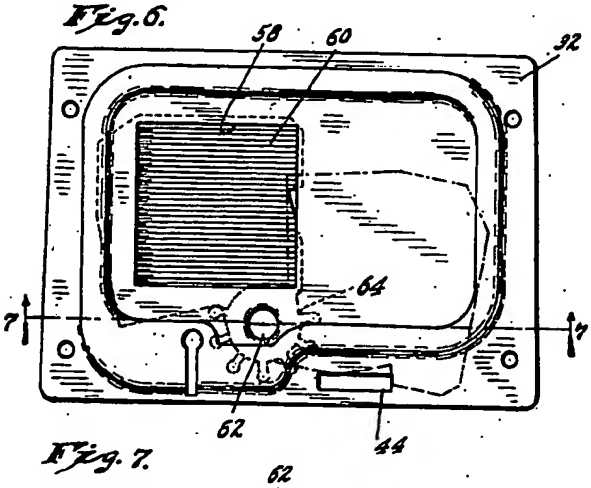


Fig. 11.

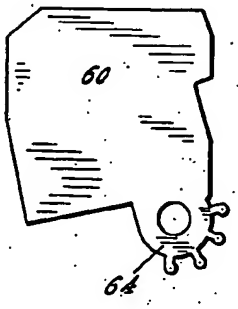
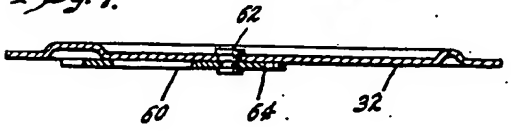


Fig. 7.



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REMOVABLE BANK MECHANISM FOR PERIODIC COIN COLLECTOR

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Fig. 8.

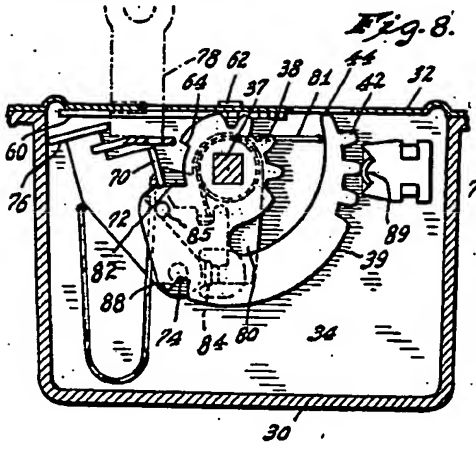


Fig. 9.

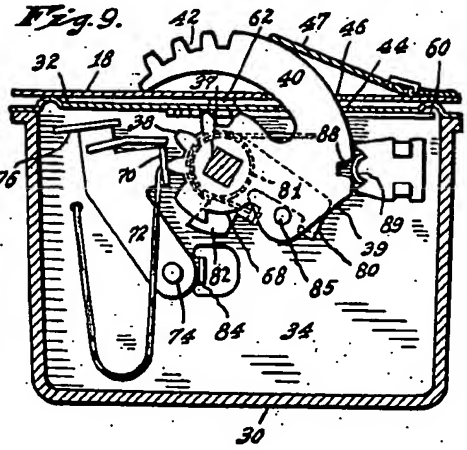
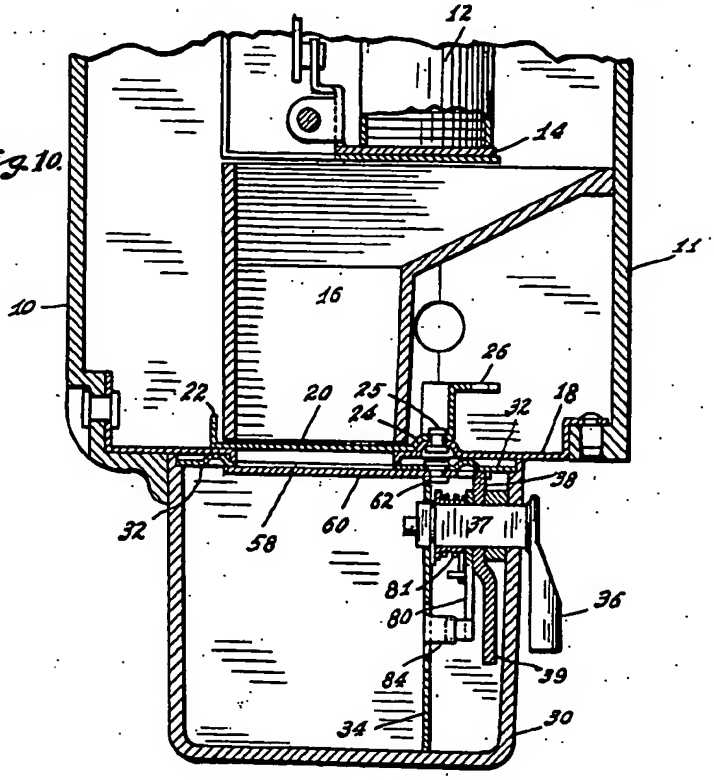


Fig. 10.



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United States Patent Office 2,783,937 Patented Mar. 5, 1957

2,783,937

REMOVABLE BANK MECHANISM FOR PERIODIC COIN COLLECTOR

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Application July 11, 1951, Serial No. 236,119

12 Claims. (Cl. 232—15)

This invention relates to a periodic coin collector, and particularly to a removable coin receiver or bank for a periodic coin collector, and to an interlocking mechanism therebetween.

Periodic coin collectors are used in connection with the sale or rental of various kinds of equipment, for example, household equipment such as refrigerators, radios, television receivers, etc. Ordinarily, they are connected in an electric control line for the equipment and require regular deposit of agreed payments in order to keep the equipment in condition for its normal operation. The collectors may provide for the reception of advance payments or for the collection of past due payments, or both. The coins deposited in them are normally retained in them until they are removed by an agent of the merchant from whom the equipment is purchased or rented.

It is an object of my invention to provide a coin collector with a removable coin receiver or bank which can be removed by the user of the equipment and taken by him to the merchant for removal of the collected coins. It is an object of my invention to combine with a periodic coin collector, a removable coin receiver or bank and suitable interlock and actuating mechanism, which will permit the bank to be removed in locked condition by the equipment user, and which upon such removal will close and lock the coin collector so that it will receive and retain the coins which are collected in the absence of the bank. It is an object of my invention to provide lock mechanism in the bank which may be pre-set by the merchant when the collected coins are removed, to permit re-insertion of the bank in the coin collector and release of the locked closure of the coin collector. It is an object of my invention to provide a removable bank which can be taken by the user to the merchant for removal of collected coins and can then be returned by the user to operative association with the coin collector, and to provide mechanism which will guard against removal of collected coins from the bank by the user and will prevent removal of coins from the coin collector when the bank is absent therefrom.

In accordance with my invention I provide the coin collector wth a coin receiving hopper having an opening for delivery of coins to an associated bank, and I provide a removable bank having an opening adapted to register with the delivery opening from the hopper. I provide shutters or other closures at the hopper opening and at the bank opening, and I provide operating mechanism for the shutters, desirably a single mechanism which operates both shutters. I preferably mount such mechanism on the bank and provide it with some interlock mechanism which interlocks the bank and the collector when it is operated to open the hopper closure. I provide means to prevent opening of either the hopper closure or the bank closure except when the bank is in coin-receiving position on the collector or when the bank is opened by the merchant for removal of the collected coins. To this end, the closure actuating mechanism is preferably controlled by a lock which limits it to a single

cycle of movement—with that single cycle including one closure-opening movement and one closure-closing movement—and the lock is arranged to be released or cocked by the merchant when he removes collected coins from the bank.

With this arrangement, the user is furnished an empty bank by the merchant, which he can insert in the coin collector in coin receiving position and which he can then actuate to open both the collector closure and the bank closure, and which upon such actuation interlocks the bank with the collector. Subsequently, in accordance with the agreement between the merchant and the user, the user may again actuate the closure operating mechanism to close both the collector closure and the bank closure and release the bank for removal from the collector. Upon such movement of the actuating mechanism its single single cycle of movement will be completed and it will be locked against further movement. The user then takes the bank to the merchant, who removes the coins contained in it and re-sets it for another similar cycle of insertion and removal from the collector.

The accompanying drawings illustrate my invention: In such drawings, Fig. 1 is a front elevation of a coin collector and associated bank, with parts broken away and shown in section and with the cover of the coin collector removed; Fig. 2 is a plan view of the bank with its cover plate removed; Fig. 3 is a plan view of the bottom of the coin collector, showing the collector shutter and its locking mechanism; Fig. 4 is a section taken on the line 4—4 of Fig. 3; Fig. 5 is a view similar to Fig. 3 with the collector shutter shown in open position; Fig. 6 is a plan view of the cover of the bank; Fig. 7 is a section taken on the line 7—7 of Fig. 6; Figs. 8 and 9 are similar vertical sections of the bank, showing the shutter-operating and interlock mechanism in two extreme positions of movement; Fig. 10 is a vertical section taken at right angles to Fig. 1; and Fig. 11 is a plan view of the bank shutter.

The coin collector shown comprises a casing 10 whose front cover plate 11 (Fig. 10) is desirably removably held in place, as by a key-controlled lock (not shown) to permit service access to the enclosed mechanism. The upper portion of the casing 10 houses a suitable coin collecting mechanism. This may be of any desired type. The fragment shown is of the mechanism of my co-pending application Serial No. 223,190, and includes a coin stack holder 12 from which coins are periodically ejected by a coin ejecting slide 14.

Below the coin ejection mechanism, the casing 10 contains a coin hopper 16 of sufficient size to contain a considerable number of coins, and formed to drop such coins through its bottom opening without jamming. The bottom wall 18 of the casing 10 has an opening in registry with the bottom opening of the hopper 16 and carries a shutter 20 pivotally slidable between the wall 18 and the bottom of the hopper 16 to close the registering openings therein.

The lower ends of the side walls of the casing 10 are grooved to slidably receive the mounting flanges 24 of a coin receiver or bank 30. The cover 32 of the bank has an opening which registers with the bottom opening of the hopper 16, and carries a pivotally slidable shutter to close that bank opening. The main body of the bank 30 is open to receive coins, and operating mechanism for the shutters is separated from the coin receiving compartment by a partition 34. The operating mechanism comprises a shaft 37 operable manually by a handle 36. The shaft 37 carries an actuating member 39 having an inner gear sector 38 to operate the bank shutter, and an arcuate interlock bolt 40 on which there is a gear sector 42 to operate the hopper shutter 20. Upon rotation of the shaft 37 by the handle 36 counterclockwise from the position shown

in Fig. 1, the interlock bolt 40 is projected through a slot 44 in the bank cover 32 and through a registering slot 46 in the bottom 18 of the collector casing 10. The inter-engagement of the interlock bolt 40 in these two slots 44 and 46 locks the bank against slidable movement of its flanges 29 in the mounting grooves and hence interlocks the bank to the casing 10. Concurrently, the gear sectors 38 and 42 actuate the two shutters of the collector and bank respectively to open position, as will appear. Desirably, the slot 46 is covered by a trap door 47 biased to closed position, to close the slot opening against the entrance of insects.

As is shown in Figs. 3, 4, and 5, the shutter 20 for the coin hopper 16 is a flat square plate with an ear 24 at its front edge by which it is pivotally connected to the bottom 18 of the collector casing, as by a pin 25. The ear 24 carries a gear segment 26 with its teeth in position to be engaged by the teeth 42 of the interlock bolt 40 when that bolt 40 is projected through the slot 46 of the bottom 18. The rear edge of the shutter 20 is turned upward and punched to form a keeper 22 for the shutter 20. This is engaged by a latch 50 at the rear end of a bell crank latch lever 52. This is pivoted on the bottom 18 by a pivot pin 53, and its front leg 54 extends transversely and is upturned to form a cam plate 55 lying in the path of the bolt 40 when it is projected through the slot 46. The latch lever 52 is biased to latched position by a suitable spring.

As is shown in Figs. 6, 7, and 11, the cover 32 of the bank has a square opening 58 to register with the opening from the hopper 16. This is closed by a shutter 60 pivotally mounted against the bottom face of the cover 32, by a pivot 62. The mounting ear 64 of the cover 60 is formed as a gear quadrant with teeth arranged to mesh with the gear sector 38 of the actuating member 39 on the handle shaft 37, with the bank shutter 60 closed when the inter-lock bolt 40 is in retracted position as shown in Fig. 1.

To automatically lock the bank shutter and the actuating mechanism in closed position upon release of the bank from the casing, the inner flange of the actuating member 39 is extended counterclockwise from the gear sector 38 and is provided with a wide notch 68 to receive a lock pawl 70 on a lock lever 72 pivoted to the partition 34 by a pivot pin 74. To release the lock pawl 70 from the notch 68 and permit movement of the actuating member from closed-shutter position, the upper end of the lock lever 72 is bent forward to provide a release finger 76, and the bank cover 32 is provided with a key opening adjacent such release finger 76 for manual insertion of a release key 78. Thus, when the bank is brought in to the merchant, he can insert a key 78, release the lock pawl 70, and turn the actuating member 39 to open the bank shutter 60 and remove the coins contained in the bank.

It is then desirable that the merchant set the actuating mechanism so that the user can re-insert the bank in the collector and actuate the shutters to put the hopper 16 into communication with the bank 30. To this end, a cocking lever 80 is rotatably mounted on the shaft 37 against the inner flange of the actuating member 39, and is biased in a counterclockwise direction by a spring 81. The cocking lever 80 carries a cocking pawl 82, and has a downwardly extending arm whose lower end moves against a fixed stop 84 carried by the partition 34, to limit clockwise movement of the cocking lever in a position where its pawl 82 lies in the path of the lock pawl 70, as shown in Fig. 8. The actuating member 39 carries a stop pin 85 which engages the cocking lever 80 when the actuating member 39 is rotated counterclockwise, so that the cocking lever 80 will be carried with the actuating member 39 as it is so rotated, with the cocking pawl 82 in the position shown in Fig. 9.

To retain the actuating member 39 in the position shown in Fig. 9, where the shutters are open and the bolt 40 is advanced to interlock the bank to the casing, the member 39 is desirably provided with a notch 88 which is engaged in such position by a resilient detent 89 carried by the partition 34.

Operation is as follows:

The periodic coin collector is connected in the usual way to control the operation of the attached equipment. A bank 30 is inserted by sliding its flanges 24 into engagement with the grooves of the casing, to the position shown in Fig. 1. It is assumed that the bank has been pre-set as in Fig. 8, and that the mechanism is in the condition shown in Fig. 8. The handle 36 is now moved counterclockwise, to project the bolt 40 through the slot 46 of the casing bottom wall 18.

As the bolt 40 enters the slot 46 from below, it lifts the trap door 47, and its nose first engages the cam plate 55 of the latch lever for the casing shutter 20, to move that lever to shutter-releasing position, as is shown in dash lines in Fig. 3 and in full lines in Fig. 5. As the bolt 40 progresses, its gear sector 42 meshes with the gear segment 26 on the shutter 20, and rotates that shutter 20 about its pivot 25 from the closed position shown in full lines in Fig. 3 to the open position shown in dash lines in Fig. 3 and in full lines in Fig. 5. Simultaneously, the inner gear sector 38 of the actuating member, meshing with the gear quadrant 64 of the bank shutter 60, moves that shutter 60 to open position.

Thus, as the bank is locked in place by the interlock bolt 40 and as the hopper shutter 20 is opened in the collector 10, the bank shutter 60 is simultaneously opened, so that coins in the hopper 16 will pass through the registering openings and into the bank 30.

The bank is left in this coin-receiving position, and coins are collected therein, for a suitable period, say a month, as the merchant and user may agree.

The user is then to remove the bank and deliver it to the merchant to be emptied. For this, he moves the handle 36 clockwise, which closes the hopper shutter 20 and releases the shutter latch lever 52 to engage the latch 50 and lock the hopper shutter closed, and which simultaneously closes the bank shutter 60 and withdraws the bolt 40 from engagement with the slot 46 of the casing.

With the bolt 40 thus retracted, the bank 30 will be released for sliding movement of its mounting flanges 24 from the grooves in the casing 10. Upon such removal, the casing 10 and the hopper 16 will be left securely closed so that any coins delivered from the collection mechanism while the bank is out of the collector will be retained in the hopper. The latch 50 makes it extremely difficult if not impossible for the user to open the hopper shutter 20 to collect any such coins.

The bank is also locked. Upon movement of the actuating member 39 clockwise from the position shown in Fig. 9, the cocking pawl 82 engages the lower edge of the lock pawl 70, and is prevented from further rotation by that lock pawl 70. Further rotation of the actuating member 39 carries its notch 68 beyond the arrested cocking pawl 82, and when that notch 68 reaches alignment with the lock pawl 70, that lock pawl enters the notch 68 to lock the actuating member 39 in closed-shutter position, as shown in Fig. 1. Since the gear quadrant 64 of the bank shutter is in mesh with the inner gear sector 38 of the actuating member 39, this locks the bank-shutter closed.

When the user takes the locked bank to the merchant, the merchant inserts his key 78, releases the lock pawl 70, and opens the bank to remove the coins. He then re-closes the bank, and cocks or pre-sets it for an operating cycle which will permit the user to re-insert it in the collector casing. For this, he again inserts the key 78 and moves the lock-lever 72 to release position. Upon such movement of the lever 72, to the position shown in Fig. 8, the cocking pawl 82 is released from below the lock pawl 70, and is moved by its spring 81 upward in front of the lock pawl 70, to hold the lock lever 72 in retracted position.

The mechanism is now pre-set for one cycle of operation, which will carry it through one shutter opening movement, that is, movement from the position of Fig. 8 to that of Fig. 9, and subsequently through one shutter-closing movement, that is from the position in Fig. 9 to the position in Fig. 1. The user can now insert the bank 30 in the collector 10, in the position shown in Fig. 1 but with the mechanism cocked as shown in Fig. 8. He can now turn the handle 36 counterclockwise through one stroke. Upon such movement, the gear sector 38 opens the bank door 60, the interlock bolt 40 interlocks the bank 30 in the collector 10, releases the latch 50, and its gear teeth 42 actuate the gear segment 26 to open the hopper shutter 20.

During the absence of the bank from the collector, the collector continues to operate in its normal way, and any coins collected are delivered to and retained in the hopper. When the bank is returned to the collector, all coins collected in the hopper are dumped into the bank as the shutters 20 and 60 are opened.

The bank can be removed by the user at any time, whenever he finds it convenient to take it to the merchant to be emptied. Once the bank is removed, however, both the coin collector and the bank are closed and locked. While the bank can be slipped back in its supporting grooves, neither it nor the collector can be opened or put into coin-delivering communication until the bank has been re-set by the merchant.

I claim as my invention:

1. A coin collector, comprising a casing having a coin discharge opening, a closure for said opening, a removable coin-receiving bank having an opening to receive coins from said casing, a closure for said bank opening, an interlock member carried with and movable with respect to one of said casing and said bank and receivable in a fixed part of the other, said member having a first range of movement for interlocking the casing and bank fixed together and a further range of movement in interlocking position, means to open said casing closure upon advance movement of said member in said further range and to close said casing closure on return movement of said member, means to open said bank closure for reception of coins discharged from said coin discharge opening when the casing closure is open, and means to close said bank closure upon movement of said member to bank-releasing position.

2. A coin collector, comprising a casing having a coin discharge opening, a closure for said opening, a removable coin-receiving bank having an opening to receive coins from said casing, a closure for said bank opening, an interlock member carried with and rotatable with respect to said bank and receivable in the casing, said member having a first range of rotation for interlocking the casing and bank together and a further range of rotation in interlocking position, means to open said casing closure upon advance rotation of said member in said further range and to close said casing closure on return rotation of said member, means to open said bank closure for reception of coins discharged by said coin discharge opening when said casing closure is open, means to close said bank closure upon rotation of said member to bank-releasing position, and interlock-member control means on the bank settable to permit a single cycle of advance and return movements of the interlock member, and means to set said control means.

3. A coin collector, comprising a casing having a coin discharge opening, a closure for said opening, a removable coin-receiving bank having an opening to receive coins from said casing, a closure for said bank opening, interlock means movable between a bank-retaining position and a bank-releasing position, retaining members respectively fixed on said casing and bank and constructed and arranged to be interlocked in fixed position by said interlock means when in bank-retaining position, means actuated by movement of said interlock means

to open and shut said closures, means to lock said interlock means in closure-shut position, and cocking means to release said interlock means for a single cycle of closure opening and shutting movements.

4. A coin collector, comprising a casing having a coin discharge opening, a closure for said opening, a removable coin-receiving bank having an opening to receive coins from said casing, a closure for said bank opening, an inter-lock member carried by said bank and movable to lock said bank to said casing, retaining members respectively fixed on said casing and bank and constructed and arranged to be interlocked in fixed position by said interlock means when in bank-retaining position, means actuated by locking movement of said member within said casing for opening said casing closure, means to open said bank closure for the reception of coins discharged from said coin discharge opening when said casing closure is open, and means actuated by unlocking movement of said member to close said bank-closure, and means permitting authorized opening of said bank when separated from said casing.

5. A coin collector, comprising a casing having a coin discharge opening, a closure for said opening, a removable coin-receiving bank having an opening to receive coins from said casing, a closure for said bank opening, an inter-lock member carried by said bank and movable into engagement with a fixed part of said casing to lock said bank to said casing, means actuated by locking movement of said member within said casing for opening said casing closure, means to open said bank closure for the reception of coins discharged from said coin discharge opening when said casing closure is open, and means actuated by unlocking movement of said member to close said bank-closure and presettable means to limit said interlock means to a single cycle of locking and unlocking movements, and means permitting authorized opening of said bank when separated from said casing.

6. A coin collector, comprising a casing having a coin discharge opening, a closure for said opening, a removable coin-receiving bank having an opening to receive coins from said casing, a closure for said bank opening, inter-locking means therebetween operating cyclically to lock said bank fixed to said case upon opening of said casing closure and to close and lock said bank closure upon release of said bank from said casing, means to open said bank closure for the reception of coins discharged from said coin discharge opening when said casing closure is open, and means to preset said interlocking means for a single-cycle operation, and means permitting authorized opening of said bank when separated from said casing.

7. A coin collector, comprising a casing having a coin discharge opening, a closure for said opening, a removable coin-receiving bank having an opening to receive coins from said casing, a closure for said bank opening, interlocking means therebetween operating cyclically to lock said bank fixed to said casing upon opening of said closures and to close and lock said closures upon release of said bank from said casing, and means to preset said interlocking means for a single-cycle operation.

8. In a coin collector, a casing having a coin discharge opening, a removable coin bank having a coin-receiving opening, closures for said openings, interlocking means therebetween comprising an operating handle on said bank connected to open and close said bank closure, an interlock member movable into said casing to lock said bank fixed thereto upon opening movement of said handle, and means inside said casing actuated by locking movement of said interlock member to open said casing closure.

9. A coin collector comprising a casing having a coin discharge opening, a pivotally mounted first closure therefor, movable in a predetermined plane, a coin receiving bank having an opening, means on the casing and bank for guiding said bank for movement in a plane

which is substantially parallel to that of said closure to position said openings in alignment, a second closure, pivotally mounted on said bank for movement substantially parallel to said first closure, an interlock member pivotally mounted on said bank for movement toward said casing in a plane which is substantially normal to the planes of movement of said closures, additional openings in said casing and bank, located so as to become aligned when said first mentioned openings are aligned and adapted to receive said member to lock said bank against withdrawal from said casing, means for pivoting said member to and from a position in said additional openings, gear means on each of said closures, rack means on said member, said rack and gear means being constructed and arranged so as to mesh after said member has entered both of said additional openings so that further pivoting of said member in the same direction will open both said closures and so that both said closures will be closed prior to withdrawal of said member from either of said additional openings.

10. The structure defined by claim 9 which includes movable means in said bank operable upon withdrawal of said member from locking position, for latching said member against subsequent movement toward locking position, key operated means for moving said latching means to ineffective position, yieldable means for holding said latching means in ineffective position and means movable by said member for disabling said holding means when said member is moved to locking position.

11. The structure defined by claim 9 which includes a door for said additional opening in said casing, means for yieldably urging said door toward closing position, when said member is withdrawn from said additional opening.

12. The structure defined by claim 9 which includes means for latching said first closure in closed position, and means operable by said member after it enters the additional opening in said casing for disabling said latching means.

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